Remarks:

In reply to the Final Office Action of November 21, 2007 ("Office Action"), applicant has, for clarification, replaced in claim 21 "at least one of the plurality of first pumps is coupled to a hydraulic motor coupled to a second turbine" with "the first fluid coupling is coupled to a second turbine" in all of the affected claims. With this change, the rejection of the claims on the basis of 35 U.S.C. § 112 is believed to be rendered moot. Reconsideration and withdrawal of this ground of rejection is respectfully requested.

Claims 13, 15, 16, 18, 20, 21, and 23 – 25 are pending. Applicant has also amended the independent claims 13 and 18 to distinguish the invention from the prior art. Claims 15, 16, 20, 21, 25 are also amended, and applicant believes no new subject matter is added. Applicant believes that the amendments to the respective rejected claims are in better form for consideration on appeal, and request that the Examiner enter these Amendments.

Claims 1 – 12 and 17 were previously canceled, and claims 14, 19, and 22 are canceled in compliance with § 1.116(b), and request that the Examiner enter these Amendments.

In the Office Action, claims 13 – 16 and 23 were rejected under 35 U.S.C. §103 as being unpatentable over Cros (US Patent 4,149,092) in view of Hopfe (US Patent 4,335,576).

No *prima facie* case obviousness has been established by the Examiner because there is no suggestion or motivation in Cros and Hopfe for those of ordinary skill in the art to combine the teachings of Cros and Hopfe. The

teachings in Cros and Hopfe are so divergent that one of ordinary skill in the art would not combine the teachings of Cros and Hopfe. Specifically, the teaching of Cros couples any number of transducers 1, 3 (propellers keyed to on the shaft of a rotary hydraulic pumps) with any number of generators 8 that are keyed to receivers 6 (rotary hydraulic motors) using a closed system of pipes. The transducers 1, 3 in Cros are submerged into a body of water to take advantage of the natural motion or currents of the water. The currents drive the propellers of the transducers rotate a shaft which forces the hydraulic pumps to cause the auxiliary liquid to flow within the closed system of pipes. Hydraulic power is represented by the flow rate of the flowing liquid that actuates the receiver 6 which in turn actuates the generator 8 by means of a shaft 7.

To the contrary, in the teachings of Hopfe the system is above the level of water, and not submerged, as illustrated in the Figures 3, 8, and 9 to take advantage of the hydrodynamic energy of waves. As the crest of the wave approaches, the mooring lines 2 forces the piston of hydraulic cylinders 4 to compress the water into the high pressure reservoir 8. As the crest of the wave passes, the mooring lines 2 forces the piston of the hydraulic cylinders 4 to open for more water to enter the hydraulic cylinder 4. Hydraulic power is represented by the pressure differential and quantity of fluid in the two reservoirs 6, 8 converted to electrical power by allowing fluid to flow through the hydraulic motor 9 which in turns drive the electrical generator 10.

Applicant respectfully submits that there is no desirability to combine Cros and Hopfe. The operating environment of Cros and Hopfe inventions are so

distinct that, in combination, the principle of operation of the modified Cros invention would change. The system in Cros being primarily submerged below water, while the system in Hopfe being completely above water on top a floating platform. Next, the operation of the hydraulic pumps is also distinct. The pumps in Cros are driven by a current of water rotating a propeller that drives piston type rotary pump. However, in Hopfe the pumps are driven by the mooring line attached to the shaft that drives the piston of a hydraulic cylinder by the position of waves. Lastly, the hydraulic piping systems are also distinct. The hydraulic piping system in Cros is a closed system containing an auxiliary liquid of a suitable oil. The Hopfe hydraulic piping system, on the hand, has the capability of an open system with the possibility of sea water as the fluid. With these fundamental differences, one of ordinary skill in the art would not be motivated to combine the teachings of Cros and Hopfe.

No *prima facie* case obviousness has been established by the Examiner because the prior art reference (or references when combined) did not teach or suggest all the claim limitations. Cros discloses a marine turbine installation including rotors positionable in a body of water such as a stream having a current that drives the rotors. The rotors are coupled to pumps that are in turn coupled to a hydraulic system including motors coupled to the driveshaft of a generator. An auxiliary fluid consisting of a suitable oil flows within hydraulic system to actuate the motor which in turn actuates the generator. The hydraulic system in Cros is a closed-loop system, i.e., that the auxiliary fluid is self-contained and Cros does not disclose a system for making up loss fluid. There is no disclosure or

suggestion in Cros for a filtering system consisting of a header tank coupled to a filter that is coupled to an intake, where the intake receives water from the surrounding body of water in which the turbine is submerged and where the header tank stores filtered water that had passed through the intake and the filter. Similarly, there is no disclosure or suggestion in Cros for a third fluid coupling between an outlet of the header tank and the inlet to the plurality of first pumps for supplying stored water to the plurality of first pumps to make up for water loss from the pressurized supply of water in the fluid circuit. Nor is there disclosure of a Pelton wheel.

Hopfe does not solve the deficiencies in Cros. Hopfe describes a system for utilizing the hydrodynamic energy of waves in a body of sea water, the system including a plurality of hydraulic cylinders 4, each cylinder having an input in communication through a hydraulic check valve 5 with an air cushioned low pressure reservoir 6 to permit flow of water into the respective hydraulic cylinder 4. A hydraulic check valve 7, connected to each cylinder 4, permits the water to flow from the respective hydraulic cylinder to an air cushioned high pressure reservoir 8. A hydraulic motor or turbine 9 is hydraulically connected between the two reservoirs 6, 8 and mechanically coupled to an electrical generator 10, with the low pressure reservoir 6 connected to the outlet of the motor 9. Further, Hopfe suggests that the plurality of hydraulic cylinders 4 could be replaced by a rotary pump and windlass arrangement, (Column 3, lines 51 – 65) although no specific disclosure of such structure is provided. Hopfe also discloses that the system is above the water level of the body of water or at least on a floating platform 1 of a buoyant construction.

Asserted in Office Action is that Hopfe teaches a filter (Hopfe, col. 4, lines 23 – 29) is coupled to a header tank (6), and that an outlet of the header tank (6) is coupled to an inlet of the first pump. (Office Action, page 3) Applicant has amended claim 13. First, the intake is not coupled to the fluid circuit but is isolated on another hydraulic circuit. Secondly, the coupling between the header tank the inlet of the plurality of first pumps is now a "third fluid coupling." Hopfe does disclose a means to adjust the quantity of hydraulic fluid by providing a source of high pressure makeup fluid by means of a small auxiliary pump arranged to take water direction from the sea through filtering. (col. 4, lines 13-18) However, it is unclear from Figure 3 where such system would be implemented and how the makeup fluid is introduced to the hydraulic system. Even if the low pressure reservoir 6 is a header tank, the fluid coupling exiting the hydraulic motor goes directly into the low pressure reservoir 6 and another fluid coupling exiting the low pressure reservoir 6 goes directly in the hydraulic pumps 4. In contrast, the second fluid coupling of the Applicant's invention exiting the hydraulic motor goes to the pumps, and the third fluid coupling exiting the header tanks also goes to the pumps. In other words, there are two potential sources of water for the pumps in the applicant's invention, and only one source in Hopfe.

Furthermore, the alternative embodiment in Figure 9 is distinct and admittedly interconnected differently than the embodiment in Figure 3. (col. 8, lines 2 – 8). Although Figure 9 includes a filtering system 34, the liquid exiting the filtering system 34 goes directly to the hydraulic cylinder 4 when the cutoff valve 5 is in the open position and the cutoff valve 7 is in the closed position, i.e.,

when the crest of the wave approaches. When the crest of the wave passes, the cutoff valve 5 is in the closed position and the cutoff valve 7 is in the open position to allow the liquid to exit the hydraulic cylinder 4 and enter the low pressure reservoir 6. Accordingly, the filtering system 34 and the low pressure reservoir 6 are not directly linked. Liquid will not exit the filtering system 34 and directly enter the low pressure reservoir 6.

The exiting liquid from the filtering system in the present invention of the Applicant, on the other hand, directly enters the header tank where it is stored until the level sensor is tripped. After the level sensor in the header tank is tripped, the stored filtered stored water exits the outlet of the header tank through the third fluid coupling and into the inlet of the plurality of first pumps. The third fluid coupling is connected between the outlet of the header tank and the inlet to the plurality of first pumps, and is used for supplying stored water to the plurality of first pumps to make up for water loss from the pressurized supply of water in the fluid circuit.

Asserted in Office Action is that Hopfe teaches a pressure balancing tank coupled between the first pumps and the inlet of the motor. Applicant respectfully submits that the high pressure reservoir 8 disclosed in Hopfe is not a pressure balancing tank. The high pressure reservoir 8 disclosed in Hopfe as shown in Figures 3 and 8 is for causing high pressurized fluid to flow to the low pressure reservoir 6, thereby actuating the hydraulic motor 9. Thus, the pressure differential is what drives the hydraulic motor. Pressurized air can be introduced to both reservoirs to optimize the pressure in Figure 3, and a reversible transfer

pump can transfer liquid between the two reservoirs to control the pressure in the high pressure reservoir 8. On the other hand, the pressure balancing tank in the Applicant's invention is for absorbing vibrational energy of the turbine rotor output.

Asserted in Office Action is that Hopfe teaches that the motor is a Pelton wheel. Although Hopfe discloses "a hydraulic motor or tubine 9," (col. 3, line 61; col. 7, lines 57 – 5 ), Hopfe does not disclose the use of a Pelton wheel. Accordingly, Applicant respectfully requests withdrawal and reconsideration of theses grounds of obviousness rejection because no *prima facie* case obviousness has been established by the Examiner.

Claims 18 – 21, 22, 24 and 25 are rejected under 35 U.S.C. §103 as being unpatentable over Cros in view of WO00/50768, as applied to claims 13 -16 and 23 above, and further in view of Hopfe. WO00/50768, which is the foreign parent of Fraenkel, US Patent 6,652,221, discloses a marine turbine installation that includes a turbine coupled to a support column, the turbine having a rotor with an output shaft that is positionable in a body of water having a current. The document contemplates that the gearbox 29 may be replaced by a hydraulic transmission system (using either suitable hydraulic oils or fluids or even sea water) and the generator 28 may then be driven by a hydraulic motor either in the nacelle 25 or even located remotely, such as above the column 1, in the housing 8 on top, or even remote from the installation with hydraulic transmissions pipes running along the seabed 3. (See paragraph bridging columns 4 and 5 of US Patent 6,652,221) However, there is no disclosure or suggestion in Fraenkel of the make-up water

system including filter, a pressure balancing tank, or a Pelton wheel as claimed by the Applicant.

This lack of disclosure or suggestion in any of the applied references of affirmative requirements of independent claims 13 and 18 precludes a finding of obviousness from some combination of these references. Accordingly, applicant respectfully traverses the rejection of the claims as now amended under 35 U.S.C. § 103 on the basis of the proposed combination. Reconsideration and withdrawal of this ground of rejection is respectfully requested. With the forgoing amendment to the claims, the present application is believed to be placed in condition for allowance. The subscribing attorney would welcome a phone conference to attend to any matter that can be addressed by an Examiner's Amendment.

Respectfully submitted,

A. James Richardson
Reg. No. 26,983

BRINKS HOFER GILSON & LIONE
One Indiana Square, Suite 1600
Indianapolis, Indiana 46204-2033
Telephone: (317) 636-0886
Fax: (317) 634-6701